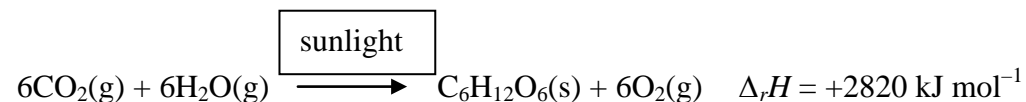


Crystal ball questions on Explaining Endothermic and Exothermic reactions

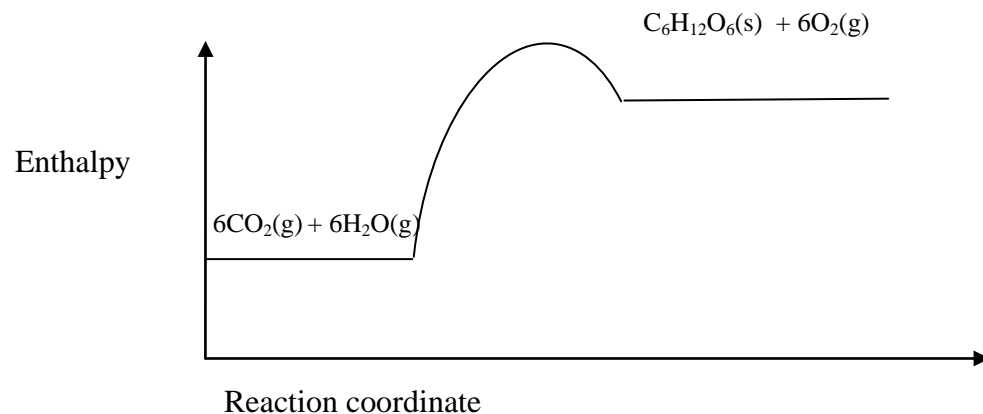
All of the following questions have not (as yet!) appeared in the NCEA Level 2 Exams

QUESTION: Answer the following questions on explaining Endothermic and Exothermic reactions

1) The equation for Photosynthesis is

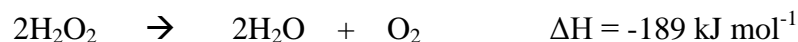


The diagram below is an energy level diagram for the Photosynthesis reaction

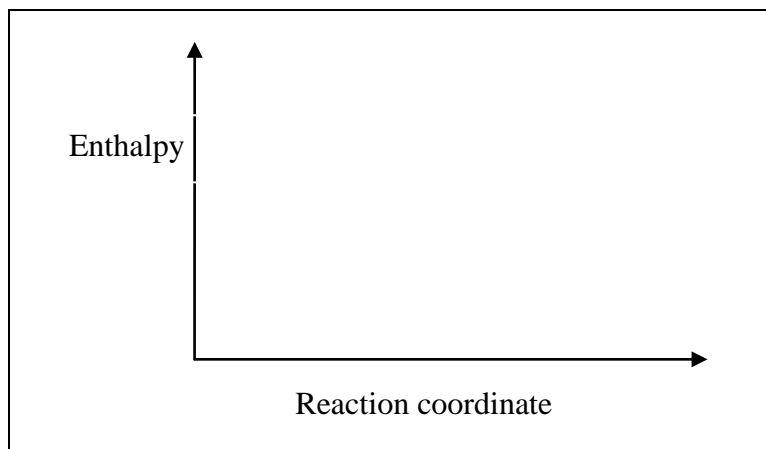


- i) Complete the labelling of the energy profile using the labels: $\Delta_r H$ and E_A
- ii) Give three pieces of information that indicate that this reaction is endothermic.

2) Hydrogen peroxide decomposes to form oxygen gas and water, this is a very slow reaction which can be sped up by a catalyst, manganese dioxide MnO_2



- i) Is energy absorbed or released during the above reaction?
- iii) Complete the energy profile for the decomposition of hydrogen peroxide



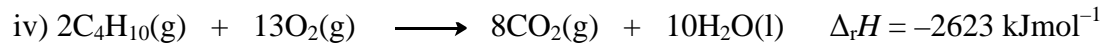
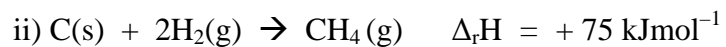
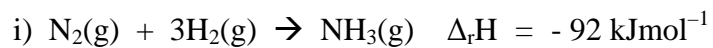
iv) Add a dotted line into your diagram which represents the change in energy if the MnO_2 catalyst is used.

ii) Will the overall yield of oxygen gas increase or decrease with the use of the MnO_2 catalyst, explain.

3) Complete the energy level diagrams for

| i) the boiling of water | ii) the condensation of water vapour |
|-------------------------|--------------------------------------|
| | |

4) Answer and explain your answers for each of the reactions below



- draw an energy level diagram
- state whether the reaction takes in or gives out heat
- state whether the reactions are exothermic or endothermic